PRESENTATION OUTLINE: — Dynamic Massive Parallel Computation Model for Graph Problems —

Isabelle Liu
School of Computer Science
Carleton University
Ottawa, Canada K1S 5B6
isabelleliu@cmail.carleton.ca

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1 Dynamic Massive Parallel Computation Model for Graph Problems

- Isabelle Liu
- COMP 5704 - Parallel Algorithm and Applications in Data Science

2 Introduction

- Background that leads to the popularity of Massively Parallel Computation (MPC)
- What is MPC
- Limitations of MPC

3 Introduction

- Dynamic algorithms and its benefits
- Dynamic MPC
- Objective of the project

4 Related Work

- DMPC results of some graph problems
- Dynamic algorithm results of maximal independent set (MIS)

5 Methodology

- Dynamic algorithms in the DMPC model
- Set of factors that determine the complexity of the dynamic algorithm
- Restrictions on the algorithm

6 Methodology

- Terminologies of maximal independent set (MIS)

7 Methodology

- Preprocessing

8 Methodology

- Apply the DMPC algorithm to MIS - insertion

9 Methodology

- Apply the DMPC algorithm to MIS - deletion

10 Methodology

- Calculate runtime
- Number of rounds
- Number of active machines per round
- Total amount of communication per round

11 Result

- The runtime and complexity of the dynamic algorithm on MIS
- Number of rounds
- Number of active machines per round
- Total amount of communication per round

12 Questions

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